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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/873,375 | 06/05/2001 | Kazuma Tanaka | 018976-196 | 5766 |

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| EXAMINER |
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YAN, REN LUO

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| ART UNIT | PAPER NUMBER |
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2854

DATE MAILED: 06/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

A2

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|------------------------------|--------------------------------------|--------------------------------------|--|
| Office Action Summary | Application No. 09/873,375 | Applicant(s) TANAKA ET AL. | |
| | Examiner Ren L Yan | Art Unit 2854 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 May 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,6,11 and 17-35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,6,11 and 17-35 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 5-24-2004 has been entered.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 6, 33 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sanyal et al(4,872,261) in view of JP 6-349663 and Kehe et al(3,225,691). The patent to Sanyal et al teaches the structure and method of a screen-printing plate 30 for applying solder paste to a PC board as claimed including providing mesh holes 36 defining a first printing pattern closer to the periphery of the plate 30 larger than the mesh holes 40 defining a second printing pattern near the center of the plate 30. The shapes of the first printing pattern formed by mesh holes 36 and the second printing pattern formed by mesh holes 40 are substantially the same such that they are used to form corresponding square printed patterns on the PC board. See Fig. 2 and column 6, lines 28-32 in Sanyal et al for example. However, Sanyal et al do not show a frame for the screen-printing plate 30 and does not show the printing pattern design in which one printing pattern surrounds the other printing pattern. It is a well known practice in the screen-

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printing art that a stencil plate is mounted and tensioned on a supporting frame and the stencil frame is then properly supported on top of the substrate being printed to carry out the printing operation. The '663 patent shows such a well known stencil frame 13 for supporting a screen-printing plate 11 so as to enable solder paste printing onto circuit boards. It would have been obvious to one of ordinary skill in the art to provide the stencil plate of the Sanyal et al with a supporting frame as taught by the '663 patent in order to ensure proper functioning of the screen-printing plate during the printing operation. With respect to the recited first printing pattern surrounds the second printing pattern, the Kehe patent is introduced to show a known screen printing plate 30 comprising a first printing pattern formed by apertures 34 disposed in the center of the printing plate 30 and a second printing pattern formed by larger apertures 38 disposed closer to the periphery of the printing plate 30 with the second printing pattern surrounding the first printing pattern. It would have been obvious to those having ordinary skill in the art to provide the screen printing plate of Sanyal et al with a first printing pattern surrounding the second printing pattern as taught by Kehe et al when the circuit board being printed is designed to have two printed patterns, one surrounds the other.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sanyal et al in view of JP 6-349663 and Kehe et al as applied to claim 6 above, and further in view of applicant's admitted prior art. Sanyal et al, as modified by the '663 patent and Kehe et al teaches all that is claimed except for the laminating and contact-bonding, cutting and firing steps as recited. On page 1, second paragraph of the present specification, applicant readily admits that laminated-ceramic electronic devices are known to be manufactured by a process exactly the same as recited in claim 11. It would have been obvious to one of ordinary skill in the art to

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manufacture the electronic device of Sanyal et al, as modified by the '663 patent and Kehe et al using the known and proven processes as admitted by the applicant so as to ensure the quality of the product.

Claims 32 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sanyal et al in view of JP 6-349663 and Kehe et al as applied to claims 1 and 6 above, and further in view of Comino et al(6,095,041). Sanyal et al, as modified by the '663 patent and Kehe et al teaches all that is claimed except for the bottom ends of the mesh holes being disposed above a bottom surface of the screen plate. The patent to Comino et al teach a screen plate 10 for printing solder paste onto a ceramic substrate the conventional use of mesh holes 32 whose bottom ends are disposed above a bottom surface of the screen plate and there is provided a space 22 beneath the mesh holes. See Figs. 1 and 6 and the abstract in Comino et al for example. In view of the teaching of Comino et al, it would have been obvious to those having ordinary skill in the art to provide the mesh holes of Sanyal et al, as modified by JP 6-349663 and Kehe et al with their bottom ends disposed above the bottom surface of the screen plate in order to produce a more uniform distribution of the solder paste being screened through the screen plate.

Claims 17-21, 23, 24, 26-29 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Balog et al(5,669,970) in view of Kehe et al. The patent to Balog et al teaches the structure and method of a screen-printing plate 14 supported at its edges by a frame for applying solder paste to a PC board as claimed including providing mesh holes 20 defining a first printing pattern closer to the periphery of the plate 14 and a second printing pattern near the center of the plate 14. The shapes of the first printing pattern and the second printing pattern are substantially the same, namely square shaped, such that they are used to form corresponding

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printed patterns on the PC board. See the attached marked up copy of Fig. 2 of Balog et al for details. The first printing pattern closer to the periphery of the screen plate 14 has an aperture ratio higher than that of the second printing pattern closer to the center of the screen plate 14 as recited. However, Balog et al do not show the first printing pattern surrounds the second printing pattern as recited. The Kehe patent teaches a known screen printing plate 30 comprising a first printing pattern formed by apertures 34 disposed in the center of the printing plate 30 and a second printing pattern formed by larger apertures 38 disposed closer to the periphery of the printing plate 30 with the second printing pattern surrounding the first printing pattern. It would have been obvious to those having ordinary skill in the art to provide the screen printing plate of Balog et al with the first printing pattern surrounding the second printing pattern as taught by Kehe et al when the circuit board being printed is designed to have two printed patterns, one surrounds the other.

Claims 22 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Balog et al in view of Kehe et al as applied to claims 17 and 24 above, and further in view of Comino et al. Balog et al, as modified by Kehe et al teaches all that is claimed except for the bottom ends of the mesh holes being disposed above a bottom surface of the screen plate. The patent to Comino et al teach a screen plate 10 for printing solder paste onto a ceramic substrate the conventional use of mesh holes 32 whose bottom ends are disposed above a bottom surface of the screen plate and there is provided a space 22 beneath the mesh holes. See Figs. 1 and 6 and the abstract in Comino et al for example. In view of the teaching of Comino et al, it would have been obvious to those having ordinary skill in the art to provide the mesh holes of Balog et al, as modified by Kehe et al with their bottom ends disposed above the bottom surface of the screen

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plate in order to produce a more uniform distribution of the solder paste being screened through the screen plate.

Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Balog et al in view of Kehe et al as applied to claims 24 above, and further in view of applicant's admitted prior art. Balog et al, as modified by Kehe et al, teach all that is claimed except for the laminating and contact-bonding, cutting and firing steps as recited. On page 1, second paragraph of the present specification, applicant readily admits that laminated-ceramic electronic devices are known to be manufactured by a process exactly the same as recited in claim 11. It would have been obvious to one of ordinary skill in the art to manufacture the circuit board of Balog et al, as modified by Kehe et al using the known and proven processes as admitted by the applicant so as to ensure the quality of the product.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ren L Yan whose telephone number is 571-272-2173. The examiner can normally be reached on 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Hirshfeld can be reached on 571-272-2168. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Ren L Yan
Primary Examiner
Art Unit 2854

Ren Yan
June 22, 2004